

Testing the HyperTransport Bus (Part II)

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FuturePlus Systems
Power Tools For Bus Analysis

**Platform
Conference**
Direction • Design • Perspective • Analysis

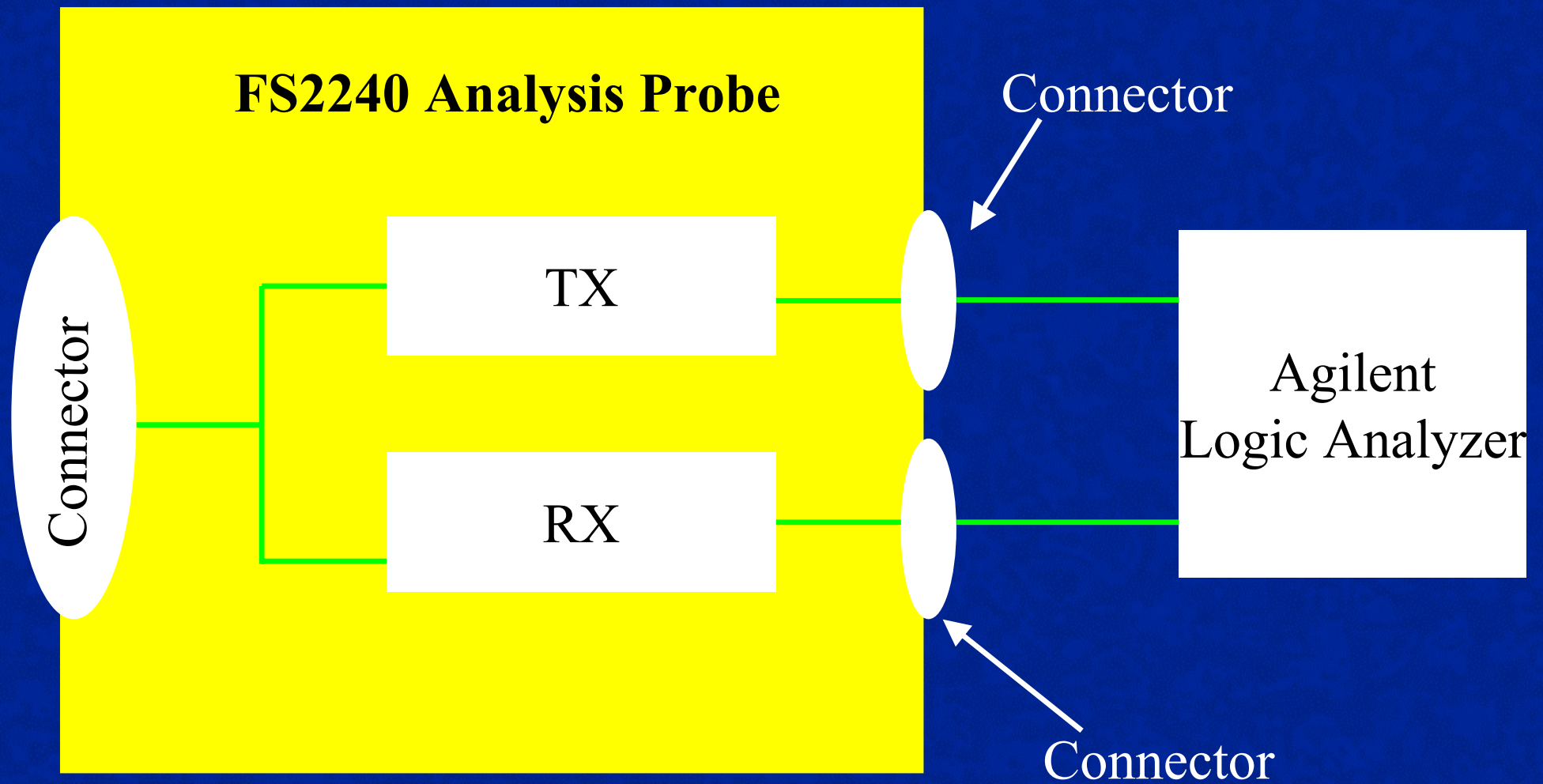
Agenda

- **Challenges of Probing HyperTransport**
- **How the FS2240 HyperTransport analysis probe works**
- **Designing in a test probe connector**
- **Value added by an analysis probe**
- **Test equipment requirements**
- **Q&A Time**

Challenges of Probing HyperTransport

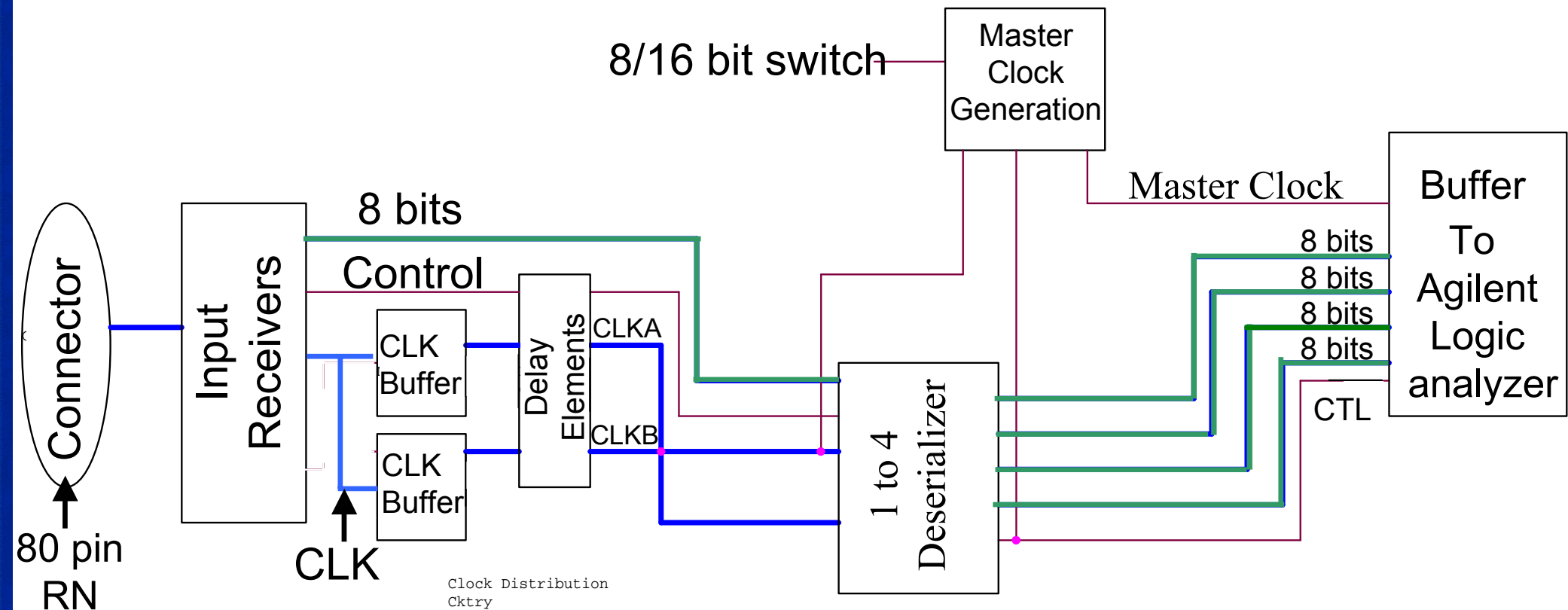
- LVDS bus
- Small data valid window
- Signal integrity
- Clocking on either edge
- Minimizing probe intrusion

HyperTransport Probe



Hardware

8 Bit TX



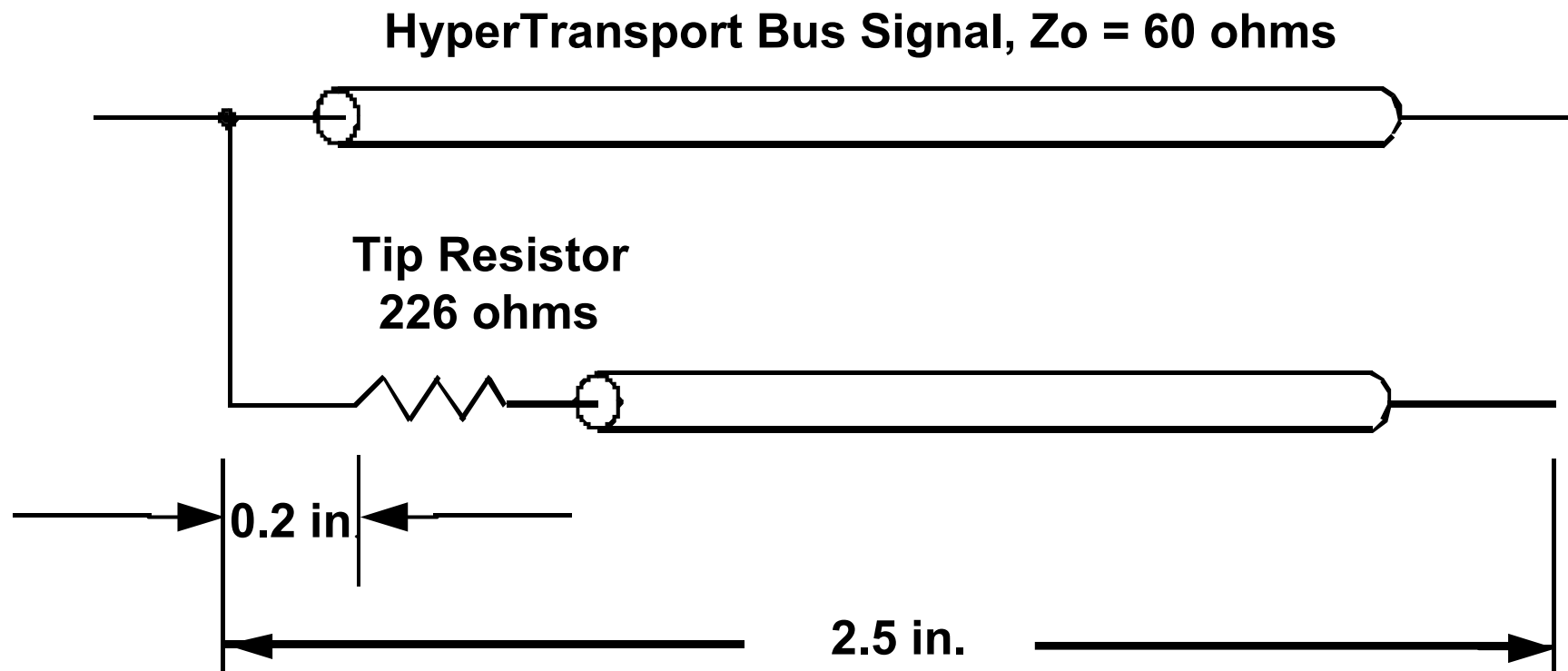
Software

- Packet-level view of bus traffic
- Creates logic analyzer clocking
- One packet per state for easy packet triggering
- Configuration file for logic analyzer

Requirements for special probe connector

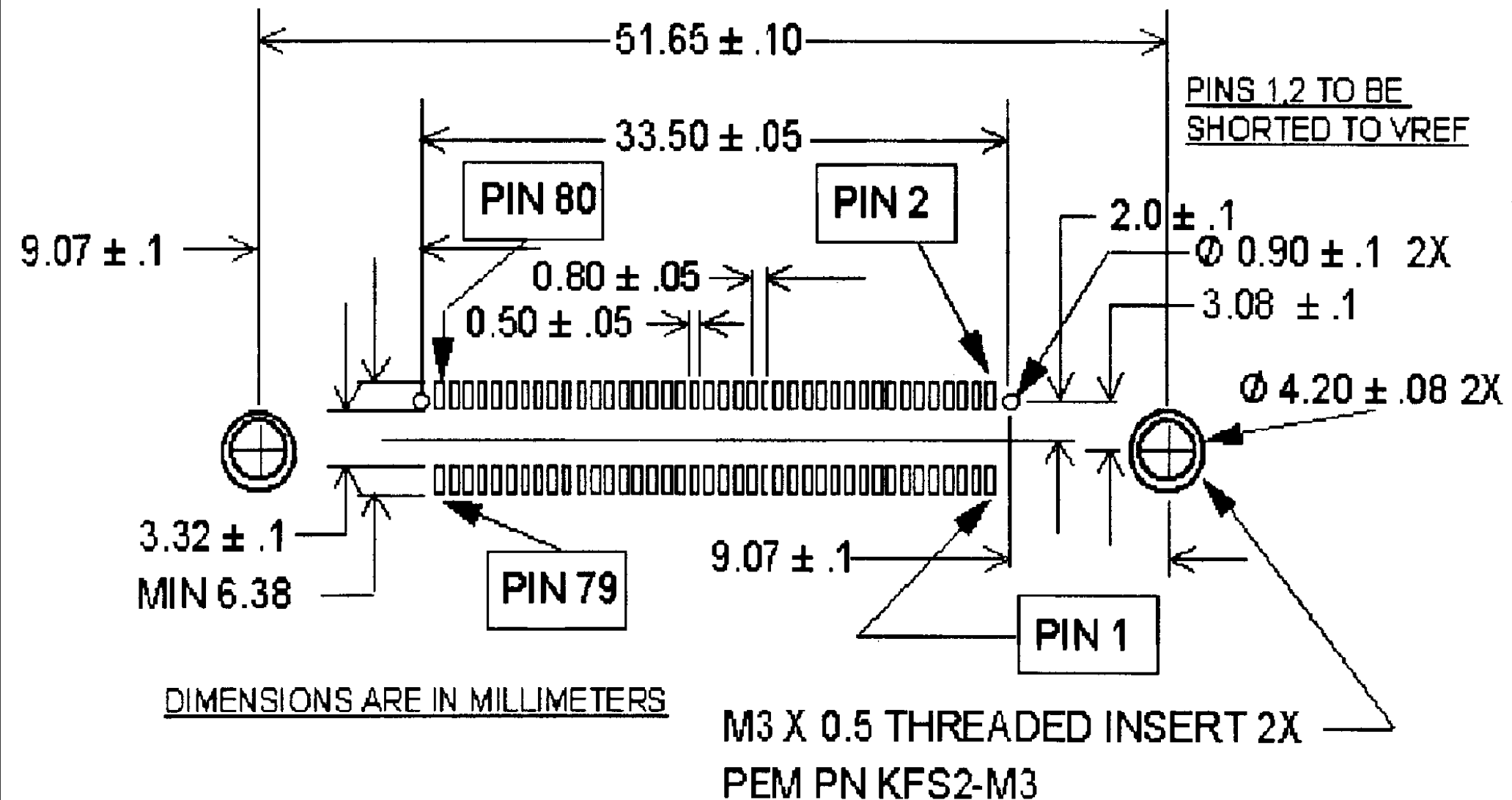
- **Use a Robinson Nugent 80 pin**
 - P/N P08-080-SL-A-G
- **Place tip resistor as close as possible to the signal etch**
 - It is preferable to place the tip resistor near the chip driver
- **Trace length variance between signal tap and the connector pins must be no more than +/- 10 mils (0.01 in.).**

Connector Layout Requirements



- 1) Maximum length of all traces = 2.5 in.
- 2) Match all traces within ± 10 mils.

Robinson Nugent Connector Footprint



The Single Most Important Thing To Do When Adding A Test Connector:

- **PLAN FOR TEST**

- Design it in at the beginning!

Bus Analysis Provides

- **Powerful triggering**
- **Verification of correct operation**
- **Viewing of bus performance**
- **Observation of entire system**

Test Equipment Required for 8 bit Tx and 8 bit RX

HyperTransport Target CLK Frequency MHz	Logic Analyzer Master Clock Frequency MHz	Logic Analyzer Required	LA Cards Required
400	200	16750A or 16751A or 16752A	1
500	250	16750/1/2A (in Turbo mode)	2
800	400	16750/1/2A (in Turbo mode)	2
1000	500	16760A (in 800 Mb/s mode)	2

One FS2240 Analysis Probe From FuturePlus

Test Equipment Required for Tx/Rx 16 bit

HyperTransport Target CLK Frequency MHz	Logic Analyzer Master Clock Frequency MHz	Logic Analyzer Required	LA Cards Required 2 way
400	400	16750/1/2A(in Turbo mode)	2
500	500	16760A (in turbo mode)	2
800	800	16760A (in turbo mode)	2
1000	1000	Contact FuturePlus for information	Contact FuturePlus for information

Two FS2240 Analysis Probes From FuturePlus

Test Equipment Required

- 8 bit TX AND 8 bit RX – 1 FS2240
- 16 bit TX OR 16 RX – 1 FS2240
- 16 bit TX AND 16 bit RX – 2 FS2240

Who Is FuturePlus Systems?

- Premier Channel Partner of Agilent Technologies
- Providing bus analysis solutions since 1991
- Offices in New Hampshire and Colorado
- Products sold direct or through Agilent sales force
- Expertise in HyperTransport, USB, PCI, DDR SDRAM, Rambus, and much more

For Additional Information

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